AMENDMENTS TO THE SPECIFICATION

Please add new paragraphs **[0045]** – **[0058],** as shown below.

[0045] The above-mentioned and other advantages of the present invention may be achieved by a flexible, smooth, collapsible obstetric bonnet that is fitted on a fetal head and has adherence thereto because of frictional and vacuum-related forces. The bonnet comprises a smooth, elastic, collapsible dome or cylinder that is contoured to fit the fetal head with a substantially skin-tight, substantially airtight fit. The dome or cylinder has an open end and a closed end. The dome or cylinder preferably has a rounded raised lip on the outer surface edge of the open end and may have a mechanical extension fixed or detachably attached to or near the apex of the outer surface of the closed end. A firm disc may be incorporated into the closed end of the dome or cylinder.

[0046] The walls of the dome or cylinder are comprised of a smooth, elastic, substantially air-impermeable material such as latex rubber or another elastomer, and the wall interior may be reinforced with an elastic mesh such as nylon. The bonnet material should be sufficiently air-impermeable so that a vacuum force is generated when a fitted bonnet is pulled after application to the fetus' head. The walls are tapered to provide a varying amount of surface area in snug contact with the fetal head.

[0047] Although the bonnet is comprised of a substantially air-impermeable material, that material may be manufactured to purposely leak, for example because of material stretching, when a calibrated excessive or limiting force is applied to the bonnet. This feature may be an important safety feature to prevent excessive force being applied to the fetus. In operation, a bonnet so modified would work as described below, except that when a calibrated force is exceeded, the bonnet leaks, the vacuum loses force, and the bonnet slowly slides off the fetus' head. The slow sliding of the bonnet off the fetus' head should prevent any damage that might be caused by an abrupt dislocation of the bonnet.

[0048] In an important embodiment, a connection may be attached to the outer surface of the closed end of the bonnet. The connection may be made with fittings for the attachment of a mechanical extension to the bonnet. Alternately, the mechanical extension may be directly fixed to the bonnet--i.e. without a separate connection.

[0049] To protect against injury to the fetus, the bonnet may incorporate a strain gauge separately or with the mechanical extension. This strain gauge may be calibrated to exhibit a warning to the practitioner when excessive force is being applied.

[0050] A mechanical extension fixed or otherwise attached to the bonnet or the connection on the closed end of the bonnet may be made to irreversibly stretch, thus alerting a practitioner when a limiting or excessive longitudinal force is being applied. The mechanical extension may be modified to allow rotational force to be applied to the fetus. It may comprise of a handle, grommet, rope, cord, flexible member or any other structure that enables the practitioner to grasp the bonnet. The mechanical extension may also comprise a substance such as rope, plastic or metal, and may be coated with a non-elastic paint or plastic that will crack or break and thereby warn a practitioner when limiting or excessive longitudinal force is applied. Fetal monitoring devices may also be attached to the connection on the closed end of the bonnet. Alternatively, the mechanical extension or the fetal monitoring devices may be directly attached to the bonnet itself.

[0051] In a preferred embodiment, the bonnet may be utilized in the following manner: (1) the fetal head is measured by ultrasound, (2) an appropriately sized bonnet is chosen, (3) the bonnet is collapsed, rolled, and inserted into the birth canal and placed on top of the fetal head, (4) the bonnet is unrolled over the fetal head, stopping short of the eyes and ears, (5) the bonnet's mechanical extension is pulled to effectuate an internally-created or self-induced vacuum between the bonnet and the fetus' head, (6) the mechanical extension is pulled or rotated to remove or turn the fetus, and (7) once birth is complete, the bonnet is removed by rolling its edges over the baby's head.

[0052] Vacuum extractors utilize a cup, the opening of which is applied to the fetal head after the device has been introduced into the birth canal. The cup is attached to a vacuum source to create a vacuum in the cup and thus adhere the cup to the fetal head. With the vacuum extractor adhered to the fetal head, the fetus can then be pulled from the birth canal by manipulating a handle provided on the end of the vacuum extractor.

[0053] A problem experienced with the use of vacuum extractors is their susceptibility to release from or "pop off" the fetal head. When a vacuum extractor repeatedly releases from a fetal head, the delivery time is increased and the opportunity for the infliction of fetal scalp abrasions is increased.

[0054] Periodically, a vacuum extractor releases from a fetal head as a result of erroneous technique when employing the vacuum extractor. Thus, a number of the "pop offs" that occur can be reduced by simply using proper technique. However, many "pop offs" result from a loss of vacuum pressure to the vacuum extractor due to an interruption of the vacuum to the vacuum extractor. This is due in large part to the fact that the prior art vacuum extractors are adapted to be connected to a vacuum source via a vacuum hose that is attached to the vacuum extractor at a point above the handle of the vacuum extractor along the longitudinal axis of the stem. In this location, the end of the vacuum hose is caused to be positioned in the palm of a physician's hand when the physician grips the handle of the vacuum extractor. As a consequence, the ability of the physician to comfortably grasp the vacuum extractor is interfered with, and more significantly, the potential exists for the vacuum hose to be bent or crimped by the physician's hand, thereby causing the vacuum pressure to the vacuum extractor to be inadvertently interrupted.

[0055] Also, for safety purposes, it is desirable when employing a vacuum extractor with certain types of vacuum units that the physician have the ability to immediately reduce or release the vacuum formed in the vacuum extractor. In an attempt to provide this ability, a vacuum release valve has been interposed between the vacuum extractor and the vacuum hose. However, due to the problem with the configuration of the prior art vacuum extractors discussed above, the release valve is caused to be located in the palm of a physician's hand when the physician grips the handle of the vacuum extractor, and thus is difficult for a physician to operate in an efficient manner.

[0056] In an embodiment of the invention, a first passageway extends from the inside of cup through the forward portion of the framework into fluid communication with the forward end of cylinder to allow liquids or gases to be drawn from cup as it embraces the head of the fetus to draw a vacuum thereon and maintain a secure connection allowing the physician to pull the head of the fetus partially through the birth canal upon the uterine contraction of the mother during the birthing process. A first check valve is configured to allow the passage of fluid through passage from cup into the cylinder upon the retraction of the piston. However, valve is oriented to prevent the reinjection of withdrawn fluids into the cup upon the forward advance of the piston after the vacuum is released in cup at the cessation of the contraction of the mother.

[0057] In an embodiment of the invention, in order to expel the liquids and gases withdrawn through passage into cylinder a second or exhaust passage or opening is provided. Passageway opens into passageway and as the piston reciprocates toward the forward end of cylinder, check valve closes and the fluids are forced to flow through second passage which allows the discharge of such fluids through a second check valve.

[0058] In an embodiment of the invention, a third passageway is formed in the frame to extend to the first passageway intermediate the cup and the check valve. Its outermost opening at a remote area of the frame is closed by a sealing valve having a thumb lever which allows the physician to use his thumb to depress lever and thereby lift valve and open third passageway to the atmosphere. Opening valve allows air from the atmosphere to flow through passages and into cup and thereby relieve the vacuum created by the retraction of piston in cylinder.